Tell us about an engineering idea you have, or about your interest in engineering. Describe how your ideas and interest may be realized by-and linked to- specific resources with the college of Engineering. Finally explain what a Cornell Engineering education will enable you to accomplish.

If you abducted me and dropped me anywhere in the world, I would automatically evaluate my surroundings it's energy. If it's a desert, I think "that's a lot of sunlight." If it's a waterfall, I think "that's a lot of mechanical energy." Living in New York City, I'm submersed in all types- pedestrians strike the sidewalk with their feet, bikers pedal through traffic, shadows dance in the street, and wind tickles the facades of skyscrapers. When I used to obsessively familiarize myself with wind turbines, I couldn't help but perversely imagine attaching armatures and stators to their swinging arms, their limbs connected to copper wound shafts.

I saw one in passing during a car ride, and was struck by its elegance. I ventured over to a New York Public Library, and renewed my card. "How many books may I take?" I felt like an immature Mathilda. "As many as you can carry," the woman at the information desk said. It went as planned. I walked home with the books in a bag (not Mathilda's red cart), and read. I came back a month later and saw the same woman. I became very familiar with the crew of workers on 34th and Lexington, and they guided me well in finding what I wanted.

After some point, however, I had to resort to the internet. My interest shifted to microgenerators. How can energy be created on a smaller scale, in an environment that doesn't require space and isn't isolated? One of the first models that I came across was a generator composed of piezoelectric tiles, designed and pursued by a group of Cornell undergraduates. The students, led by Professor Charles Moon and collectively known as the Vibro-Wind Research Group, invented a mechanism that can harness wind in small and otherwise seemingly useless areas. They can be attached to buildings or flagpoles. I thought, "That is genius."

I would love to attend a school where I can continue to grow in a community of people interested in innovative renewable energy solutions, and the greatest part about this project is that it was developed by undergraduate students. I would love to continue to grow in a community of other interested students.

My interests narrowed even more. How can we harness even more inaccessable and smaller amounts of energy? I started reading about nanogenerators and the numerous of available types. I read about piezoelectric to thermoelectric to pyroelectric. But now not even literature and videos on the internet could suffice. I had questions that I struggled finding answers too. Looking through different patents, I contacted Jinhui Song, who co-patented a certain type of piezoelectric nanogenerator in regards to one of my confusions about his patent. I received the answer I wanted and continued. I continued to reach out to different scientists, as well as people marketing them. As I continued, I was led to Cornell's Nanoscience and Nanotechnology center. It has many faculty members that focus on renewable energy research and development, and again I would love to be part of a school that is so engaged with this field.

A Cornell Engineering education will enable me to understand and implement ideas that will significantly change the way our society generates energy. Specifically, I believe that the energy-generating floor (a piezoelectric version, and a triboelectric version).is due for a drastic improvement. Laurence Kemball-Cook has been marketing This floor should be improved for two reasons: there are five nanogenerator phenomena that apply to it, and it encourages people to be active. The floor can harness the changing temperatures from the warm sidewalk to shadowed sidewalk through thermoelectricity, it can harness the thermal difference in soil under the sidewalk with the heated sidewalk through pyroelectricity, it can harness the sunlight on the sidewalk itself through photoelectricity, it can harness sidewalk compression through piezoelectricity, and it can harness other types of sidewalk deformation through triboelectricity. Having explored the largest generators to the smallest ones, I think it

is important to integrate the different concepts and ideas. It is important to consider nanogenerator concepts for microgenerators, and how different types of generators overlap in other ways.

This is true for other areas of creating as well. There are similarities between different fields in engineering, and it is important to consider how they interact and are important to each other. Cornell's Engineering college is part of numerous of the communities I am interested in, and it is engaged in other communities. I have even worked with a recent Cornell graduate on the China Energy Project who works on environmental policy. The opportunities and depth of Cornell University makes me believe I could truly pursue my ideas and strive there.

FINAL DRAFT

Living in Manhattan, I'm surrounded by untapped energy sources: pedestrians strike the sidewalk with their feet, light and shadows dance in the street, and wind tickles the facades of skyscrapers. I find it perplexing that people do not fully utilize the physical vibrancy of booming cities to generate renewable electricity, even though environmental catastrophe looms as a result of population growth. I had always been interested in renewable energy, but because of the paradox I couldn't ignore in New York City, my focus shifted to microgenerators and nanogenerators that could be used in urban areas.

In 2010, I drove past wind-turbines in the Spanish countryside. Their elegance was striking and piqued my fascination with renewable energy. At home, I ventured to the library and borrowed as many books as I could carry. After a year, I knew the library staff and had read through every wind turbine book on their shelves.

I turned to the Internet, where I began to look into smaller generators and micro-grids. When I realized how geographically isolated wind turbine projects tend to be, I wondered how energy could be created on a smaller scale. I began to read about micro wind turbines such as the Honeywell model. When I saw that protective casing embedded its magnets, I felt embarrassed that I had missed such a simple solution to increase the speed of the conducting armatures.

I was determined to find a way to take advantage of the abundant forms of energy available in urban areas. Through my research, I learned that wind turbines can not harness much of the turbulence swirling about in cities. For example, wind gusts from passing cars, subways, and people are too minute and random to spin most micro wind

turbines. Nevertheless, I was convinced that these forms of energy must have value.

I eventually discovered a design that harnessed smaller amounts of wind energy, a generator composed of piezoelectric tiles that a group of Cornell College of Engineering undergraduates had designed and created. The students, led by Professor Charles Moon and collectively known as the Vibro-Wind Research Group, had developed a mechanism that could exploit the smaller winds.

This intriguing project allowed me to learn about how piezoelectricity and other phenomena like it are important for nanogenerators. Eager to learn more, I reached out to the renewable energy community. I contacted the scientist Jinhui Song about one of his patented piezoelectric nanogenerators and spoke to salesmen about piezoelectric products. Eventually I came up with my own idea for a new type of electricity-generating floor that can use pyroelectricity, photoelectricity, piezoelectricity, and triboelectricity to harness the changing temperatures, sunlight, and mechanical pressure that all act on the sidewalk.

The Cornell College of Engineering would encourage me to continue the work I have begun. In addition to the Vibro-Wind Research Group, I could avail myself of other resources on campus. The Cornell Creative Machine Lab supports other innovative projects that pertain to renewable energy, and the college's Nanoscience and Nanotechnology department has a focus on renewable energy research. I would be able to research and work with professors, and I would try to become part of a Student Project Team; the Cornell University Sustainable Design team and its Farm Pond Circle project particularly excite me.

On a final note, I've always been interested in attending Cornell because I have strong family ties to the school. Many of my relatives are Cornell graduates, and my uncle Bernard Yudowitz is an ardent supporter of the university and its Hillel. As a student in the School of Engineering, I would be able to continue my family's legacy at Cornell and study in an environment that would support my passion for renewable energy.